

REMARKS

The present application relates to hybrid maize plant and seed 38J54. Claims 1-32 are currently pending in the present application. Applicant respectfully requests consideration of the following remarks.

Detailed Action

A. Request for Continued Examination

The Examiner acknowledges Applicant's Request for Continued Examination under 37 C.F.R. § 1.114 based upon parent Application No. 09/491,910 as acceptable.

B. Specification

The Examiner objects to the specification for the inclusion of blank lines where ATCC accession numbers should be. Applicant herein is submitting amendments to claims 1, 5, and 7 and to the Specification on pages 7 and 42 to include the proper ATCC accession numbers. Applicants submit that at least 2,500 seeds of Variety 38J54 have been deposited with the ATCC on May 13, 2002 (proprietary inbred maize lines GE500988 and GE533415 on May 6, 2002). In view of these deposits, the rejections under 35 U.S.C. § 112, first paragraph should be removed (MPEP § 2411.02). Such action is respectfully requested.

C. Claim Objections

The Examiner objects to claims 6, 12, 16, 25 and 29 for the use of "A". Applicant has now amended these claims to include --The-- as suggested by the Examiner, thereby alleviating this objection.

D. Double Patenting

The Examiner rejects claims 1-32 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-31 of U.S. Patent No. 6,180,856 ('856). The Examiner states that although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed hybrid maize seed designated 38J54 of the present invention does not appear to be patentably distinct from the claimed hybrid maize seed designated 38N40 of '856. The Examiner acknowledge that "the instantly claimed plants and the patented plants have different designations". The Examiner further states that the designation "38J54" of the instantly claimed hybrid is arbitrarily assigned, and does not provide any patentable distinction from the hybrid claimed in the '856, "38N40". The Examiner goes on

to state that any differences between 38J54 and 38N40 are due to minor morphological variations that do not confer patentable distinction.

Applicant respectfully traverses this rejection. Claims 1-32 are patentably distinct because they involve a novel maize seed, plants, plant parts, and methods. Applicant's detailed arguments are set forth infra in the Issues under 102/103 section. Applicant further asserts the use of the designation "38J54" is not arbitrarily assigned. It is common practice within plant breeding that a new and distinct maize seed is designated with a numerical number such as 38J54 which defines the claimed hybrid maize seed which will be deposited under an ATCC accession number. The use of such a designation is a common practice within the art and would be well understood by one skilled in the art to be two distinct and unrelated hybrid maize seeds. In addition, as provided in 37 C.F.R. §§ 1.801-1.809, Applicant has now amended the claims and the specification accordingly to include the ATCC accession number from the deposit of Hybrid 38J54 thereby making this rejection moot.

E. Claims

Applicant acknowledges the addition of new claims 33 through 40. The new claims do not add new matter as there is literal support for the claims in the originally filed specification (pages 34-37, specification).

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1-32 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

The Examiner maintains the rejections to claims 1, 5, 7, 11, 15, 19, 24, 28 and 32, and claims dependent thereon, as indefinite in the recitation of a plant by the designation "38J54". The Examiner states that since the name "38J54" is not known in the art, the use of this name does not carry art-recognized limitations as to the specific or essential characteristics that are associated with that denomination". The Examiner further states that the name "38J54" does not clearly identify the claimed hybrid maize seed and does not set forth the metes and bounds of the claimed invention. The Examiner also states that amendment to claims 1, 5, and 7 to recite the ATCC deposit number in which hybrid maize seed 38J54 has been deposited would overcome the rejection.

Applicant submits that a deposit has been made thereby alleviating this rejection. As stated supra, Applicant is herein submitting amendments to claims 1, 5, and 7 and to the specification on pages 7 and 42 to include the proper ATCC accession numbers. Applicant submits that at least 2,500 seeds of Variety 38J54 have been deposited with the ATCC on May 3, 2002. In addition, applicant submits the use of the designation "38J54" is not indefinite. One ordinarily skilled in the art would clearly understand that this designation is drawn to a new and distinct hybrid maize seed with the designation of 38J54 and the morphological and physiological traits that are disclosed in the specification. (See Tables 1-4, pgs. 16-28). Applicant asserts that the use of such a designation is a common practice within the art and would be well understood by one skilled in the art to be designating two distinct and different hybrid maize seeds. Nonetheless, in view of these deposits, the rejections under 35 U.S.C. § 112, second paragraph should be removed (MPEP § 2411.02). Such action is respectfully requested.

The Examiner asserts that claims 11, 15, 19, 24, 28 and 32 are indefinite in their recitation of "excellent", "above average", "similar" and "particularly suited", as the Examiner states these terms do not reasonably apprise one of the scope of the invention. The Examiner states it is not clear what type of yield, grain yield, pollen yield, seed yield etc.; the recitation "excellent yield potential is referring to. Finally, the Examiner states the recitation of "Northcentral region of the United States" also renders the claims indefinite.

Applicant respectfully traverses this rejection. Each of these claims recites two requirements, first that 38J54 be an ancestor of the plant and second, that the claimed plant be "capable of expressing a combination of at least two 38J54 traits" selected from a Markush grouping. Applicant notes that the Markush listing is directed to "38J54" traits. Thus, Applicant submits that the recitation of 38J54 traits clearly delineates the traits listed as those which are from 38J54 or ancestors thereof. The recitation of "38J54" in front of the term traits clearly indicates that the traits must be originating from 38J54. This is particularly so since the claim also requires that the plant 38J54 must be an ancestor of the claimed plant. Applicant further submits that the adjectives used within the claims are not unduly narrative or imprecise as they do clearly characterize and positively recite the degree of expression of the particular traits within the application in Tables 1-4 (pages 16-28). This terminology is well known in the art and commonly used within breeding techniques of hybrid plants. In addition, Applicant has amended claims 11, 15, 19, 24, 28 and 32 by adding the threshold, having 50% of the alleles, as well as an

assayable function, capable of expressing at least a combination of two traits of 38J54. There is literal support for the amended claims found in the specification on page 3 and beginning on page 29 of the instant specification. Further, Applicant asserts it is exactly clear what states or geographic areas define these regions and would be understood to one skilled in the art. Applicant have now deleted the areas of adaptability therefore alleviating the rejection to the recitation of regions. Applicant therefore respectfully submits that this language is not indefinite and would be understood by one in the art and is the terminology of use within the art. Therefore, Applicant respectfully requests reconsideration.

Furthermore, in Georgia-Pacific, the Federal Circuit stated that "...the policy of the patent statute contemplates granting protection to valid inventions, and this policy will be defeated if protection were to be accorded to those patents which were capable of precise definition." Georgia-Pacific Corp. v. U.S. Plywood Corp., 258 F.2d 124, 136, 118 U.S.P.Q. 122 (2nd Cir.). While some decisions have advocated the general statement that "[a]n invention must be capable of accurate definition, and it must be accurately defined, to be patentable, (See United Carbon Co. v. Binney & Smith Co., 1942, 317 U.S. 228, 237, 63 S.Ct. 165, 170, 87 L.Ed. 232), the Federal Court has stated that "such general statements, however, must be viewed in the context of circumstances. Objectionable indefiniteness must be determined by the facts in each case, not by reference to an abstract rule." Georgia-Pacific at 136. "Patentable inventions cannot always be described in terms of exact measurements, symbols and formulae, and Applicant necessarily must use the meager tools provided by language, tools which admittedly lack exactitude and precision. If the claims read in light of the specification, reasonably apprise those skills in the art both in utilization and scope of the invention, and if the language is as precise as the subject matter permits, the courts can demand no more." Id. (See North American Vaccine Inc. v. American Cyanamide Co., 7 F.3d 1571, 28 U.S.P.Q.2d 1333, 1339 (Fed. Cir. 1993)). Moreover, it is against the policy of the patent statute to bar patent protection for inventions that are incapable of precise definition. Georgia-Pacific at 136. With respect to the above-mentioned terms, the claims are as precise as the subject matter of the invention permits. Therefore, Applicant respectfully requests reconsideration of the claims.

In light of the above remarks, Applicant submits that claims 1-32 clearly define and distinctly claim the subject matter Applicant regards as the invention. Applicant respectfully

requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, second paragraph.

Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 8, 11-19, 21, and 24-32 were rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The Examiner asserts the claims are broadly drawn towards a corn plant produced by growing seed of any hybrid maize seed designated 38J54, wherein said plant is male sterile; or any maize plant or its parts wherein at least one ancestor is 38J54 and expresses a combination of at least two 38J54 traits; or a hybrid maize plant grown from seed 38J54, or which has all the morphological and physiological traits as the plant grown from 38J54 seed, and which contains one or more transgenes; or a method for developing a maize plant and the maize plant breeding program comprising said hybrid maize plant comprising one or more transgenes; or any maize plant wherein at least one ancestor is the hybrid maize plant comprising one or more transgenes and which expresses at least two 38J54 traits, or a hybrid maize plant grown from 38J54 seed wherein the genetic material contains one or more transgenes transferred by backcrossing; or a method for developing a maize plant in a maize plant breeding program comprising said hybrid maize plant comprising one or more genes transferred by backcrossing; or any maize plant where at least one ancestor is the hybrid maize plant comprising one or more genes transferred by backcrossing which expresses at least two 38J54 traits. The Examiner further states the specification does not describe 38J54 as being male sterile. The specification discusses how plants may be manipulated to be male sterile, however the morphological and physiological description of plant 38J54 described in the specification does not indicate that it is male sterile.

Applicant respectfully traverses this rejection. Applicant asserts that large scale commercial hybrid maize production requires the use of some form of male sterility system which controls or inactivates the male fertility (page 2, specification). Applicant respectfully submits that the specification supplies an extensive description and definition of "male sterility" in the hybrid 38J54 (pages 2-4, specification). The present invention teaches how a "reliable method of controlling male fertility in plants offers the opportunity for improved plant breeding"

(page 2, specification). It is essential to understand that a hybrid maize seed that is produced using cytoplasmic male sterile (CMS) inbreds are "[p]lants.... are male sterile as a result of factors resulting from the cytoplasmic, as opposed to the nuclear, genome. Thus, this characteristic is inherited exclusively to the female parent in maize plants, since only the female provides cytoplasm to the fertilized seed. CMS plants are then fertilized with pollen from another inbred that is not male sterile" (page 2, specification). Applicant respectfully submits that claims 8, 11-19, 21 and 24-32 do clearly define and distinctly claim the subject matter Applicant regards as the invention. However, in order to expedite prosecution, Applicant has now amended claims 8 and 21 by adding the recitation "has been manipulated to be male sterile", as suggested by the Examiner, thus alleviating this rejection. Support can be found on page 13 of the specification, wherein it states "[i]t should be understood that the inbred can, through routine manipulation of cytoplasmic or other factors, be produced in male-sterile form. Such embodiments are also contemplated within the scope of the present claims."

The Examiner further states the specification does not describe the plants developed by the maize breeding programs, transgenic 38J54 plants, 38J54 plants further comprising genes transferred by backcrossing, or maize plants wherein at least one ancestor is corn variety 38J54 and which expresses at least two of the traits listed in claims 11, 15, 19, 24, 28 or 32. Given the breadth of the claims encompassing corn plant 38J54 the Examiner states the specification fails to provide an adequate written description of the multitude of corn plants and/or parts encompassed by the claims.

Applicant respectfully traverses this rejection. Applicant respectfully submits that a deposit, as discussed supra, has been made. Applicant is herein submitting amendments to claims 1, 5, and 7 and to the specification on pages 7 and 42 to include the proper ATCC accession numbers. Applicant submits that at least 2,500 seeds of Variety 38J54 have been deposited with the ATCC on May 3, 2002. Further, Applicants assert the written description requirement set forth in 35 U.S.C. § 112 is met, particularly in light of the fact that, as stated above, Applicants have reduced the invention to practice and deposited the derived biological materials in a public depository, thereby demonstrating its "possession" of the invention. Enzo Biochem Inc., v. Gen-Probe, Inc., 63 U.S.P.Q.2d (BNA) 1609, 1613 (Fed. Cir. 2002) ("In light of the history of biological deposits for patent purposes, the goals of the patent law, and the practical difficulties of describing unique biological materials in a written description, we hold

that reference in the specification to a deposit in a public depository, which makes its contents accessible to the public when it is not otherwise available in written form, constitutes an adequate description of the deposited material sufficient to comply with the written description requirement of § 112, 1."); see also MPEP § 2163.02 (8th ed. Aug. 2001) ("Under Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1563-64, 19 U.S.P.Q.2d 1111, 1117 (Fed. Cir. 1991), to satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention, and that the invention, in that context, is whatever is now claimed.") In view of these deposits, the rejections under 35 U.S.C. § 112, first paragraph should be removed (MPEP § 2411.02). Such action is respectfully requested.

Furthermore, Applicant has amended claims 11, 15, 19, 24, 28 and 32 by adding the threshold, having 50% of the alleles, that limits the variation permitted among the genus, as well as an assayable function, capable of expressing at least a combination of two traits of 38J54. There is literal support for the amended claims found in the specification on page 3 and beginning on page 29 of the instant specification. Plant breeding techniques known in the art and used in the maize plant breeding program include, but are not limited to the following: recurrent selection backcrossing, pedigree breeding, restriction length polymorphism enhanced selection, genetic marker enhanced selection and transformation. With the amendments to the above-stated claims, Applicant has identified a transgenic 38J54 plant (claim 12), a 38J54 plant further comprising genes transferred by backcrossing (claim 14), or a maize plant wherein at least one ancestor is maize variety 38J54 (claim 15) by defining a particular threshold that limits variation and reciting a functional test to identify such plants. In addition, Applicant has drafted new claims 33-40 which Applicant believes come within the purview of the written description requirement and do not add new matter. Under the written description requirement, Applicant should be allowed to claim the progeny of a cross of maize plants crossed with 38J54 with phenotypic characteristics since distinguishing identifying characteristics in the chemical and biotechnological arts, dealing with DNA, are those such as: partial structure, physical and/or chemical properties, functional characteristics, known or disclosed correlation between structure and function, method of making, and combinations of the above. In plants, these identifying characteristics are those detectable in the phenotype which are manifested through gene expression. Claims to a particular species of invention are adequately described if the disclosure

of relevant identifying characteristics are present in the application. Again, one of ordinary skill in the art is reasonably apprised in knowing that a plant crossed with 38J54 will result in a plant having half of the genetic contribution of 38J54. A further limitation set by Applicant is that the plants must be capable of expressing a combination of at least two phenotypic characteristics of 38J54.

Further, Applicant asserts the specification supplies an extensive definition and description of 'transgene' and transgenes of interest. (See generally pages 29-34 and 34-41 for an extensive list of potential transgenes.) Applicant also notes, a person having skill in the art could insert a DNA gene into a selected maize plant. Applicant has defined transgenes in the present application in the paragraph that spans pages 29-30 as follows:

With the advent of molecular biological techniques that have allowed the isolation and characterization of genes that encode specific protein products, scientists in the field of plant biology developed a strong interest in *engineering the genome of plants to contain and express foreign genes, or additional genes* (perhaps driven by different promoters) in order to alter the traits of a plant in a specific manner. *Such foreign, additional and/or modified genes are referred to herein collectively as "transgenes".* Over the last fifteen to twenty years several methods for producing transgenic plants have been developed, and *the present invention, in particular embodiments, also relates to transgenic versions of the claimed hybrid 38J54.*

(emphasis added) The present application clearly describes and defines a transgene to be a gene transferred into a plant wherein the product of that gene is expressed. This expression will confer a new or improved trait into that plant. However, this gene is but a tiny fraction of the entire genome. In other words, the plant of claim 12 is distinguishable from the prior art plants just as is hybrid 38J54 without the transgenes. Further, the plant of claim 12 also contains a trait(s) that is either improved or additional to the traits of the maize plant of claim 2. The 38J54-transgene plant still expresses the unique combination of traits of 38J54 without the transgenes with the exception of the traits expressed by the transgenes. The trivial modifications introduced by the transgenes to the unique invention of 38J54 are clearly supported and described in the present application.

Finally, the Examiner asserts that the specification provides a narrative of the transgene within the scope of the claim to particularly point out and distinctly claim the subject matter the applicant regards as the invention. However, Applicant respectfully submits that "[t]he test for definiteness is whether one skilled in the art would understand the bounds of the claim when read

in light of the specification. . . . If the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, § 112 demands no more. . . . The degree of precision necessary for adequate claims is a function of the nature of the subject matter." Miles Laboratories, Inc. v. Shandon Inc., 997 F.2d 870 (Fed. Cir. 1993).

In light of the above remarks, Applicant respectfully requests reconsideration and withdrawal of the rejections to claims 8, 11-19, 21 and 24-32 under 35 U.S.C. § 112, first paragraph.

Claims 1-32 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant respectfully traverses this rejection and reiterates with regard to the deposit of Hybrid 38J54, Applicant wishes to note that:

- a) during the pendency of this application access to the invention will be afforded to the Commissioner upon request;
- b) all restrictions upon availability to the public will be irrevocably removed upon granting of the patent;
- c) the deposit will be maintained in a public depository for a period of thirty years, or five years after the last request for the enforceable life of the patent, whichever is longer;
- d) a test of the viability of the biological material at the time of deposit will be conducted (see 37 C.F.R. § 1.807); and
- e) the deposit will be replaced if it should ever become inviable.

Applicant respectfully submits that a deposit, as discussed supra, has been made. Applicant is herein submitting amendments to claims 1, 5, and 7 and to the specification on pages 7 and 42 to include the proper ATCC accession numbers. Applicant submits that at least 2,500 seeds of Variety 38J54 have been deposited with the ATCC on May 3, 2002. In view of these deposits, the rejections under 35 U.S.C. § 112, first paragraph should be removed (MPEP § 2411.02). Such action is respectfully requested.

In light of the above remarks, Applicant submits that claims 1-32 clearly describe and distinctly claim the subject matter Applicant regards as the invention. Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, first paragraph.

Issues Under 35 U.S.C. § 102/103

Claims 1-32 stand rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Piper (U.S. Patent 6,180,856). Particularly, the Examiner states arguments to claims 5, 11, 15, 19, 24, 28 and 32 were not found persuasive. The Examiner states the claims are broadly drawn towards hybrid maize seed designated "38J54". The Examiner further states that Piper '856 teaches seed of a hybrid maize line designated "38N40", plants produced by growing said seed, and plants and plant parts, including pollen and ovules. The Examiner states that it appears that the claimed plant and seed to the instant invention may be the same as 38N40, given that they exhibit similar traits, such as above average root strength, above average resistance to brittle snap, and are particularly suited to the Northcentral region of the United States. The Examiner concludes stating that the claimed invention is *prima facie* obvious as a whole to one of ordinary skill in the art at the time it was made, if not anticipated by Piper '856.

Applicant respectfully traverses this rejection and requests reconsideration of claims 1-32. The Applicant would like to point out that the inventions 38J54 and 38N40 are not the same inventions. Nor are their differences minor morphological variations. Applicant submits that the claimed plant cannot be rendered obvious as it possesses a unique combination of traits which confers a unique combination of genetics. Moreover, Applicant claims a method of making a plant which did not previously exist. Pursuant to the recent Federal Circuit decision, Elan Pharmaceuticals, Inc. v. Mayo Foundation for Medical Education & Research, No. 00-1467 (Fed. Cir. Aug. 30, 2002), "a novel patented product is not "anticipated" if it did not previously exist." *Id.* This is the case whether or not the process for making the new product is generally known. *Id.* The invention 38J54 has not previously existed as it is the result of crossing two maize inbred lines GE500988 and GE533415.

Furthermore, when looking at the tables of both inventions, hybrids created using 38J54 as one of the parents are clearly not anticipated by hybrids made using 38N40 as one of the parents. The inventions 38J54 and 38N40 differ for various traits that are not minor. For

example, 38J54 has resistance to Fusarium Ear and Kernel Rot when compared with 38N40. As reported in Table 1, 38J54 has a resistance of 5 (page 18). As reported in Table 1 of 6,180,856 Patent, 38N40 has no teaching. Another example, as reported in Table 1, 38J54 demonstrates an anther color of red (page 16). As reported in Table 1 of the 6,180,856 Patent, 38N40 demonstrates an anther color of light green. A third example of the differences is that 38J54 exhibits a different silk color than 38N40. As reported in Table 3, 38J54 has a silk color of light green. As reported in Table 1, 38N40 has a silk color of pink.

Other traits which differ between the two inventions include: plant height (38J54 227 cm, 38N40 271 cm), resistance to Anthracnose Stalk Rot (38J54 above average, 38N40 average), and resistance to European Corn Borer (38J54 superior resistance, 38N40 no teaching).

The aforementioned examples all illustrate that there are large differences between 38J54 and 38N40. The examples listed are not exhaustive but they do give ample evidence that the inventions are not the same. Furthermore, when looking at the tables of both inventions, hybrids created using 38J54 as one of the parents are clearly not anticipated by hybrids made using 38N40 as one of the parents.

Applicant further submits that the claims do not simply recite traits, but instead recites these specific traits only to the extent that they are "38J54" traits; thereby being derived from the seed/germplasm of 38J54. Note, variety with respect to agricultural variety, can be defined as a group of similar plants that by structural features and performance can be identified from other varieties within the same species. When looking at maize plants it would be possible for one ordinarily skilled in the art to find many traits that are similar between varieties such as the disease resistance or growth habit. Nonetheless, the claim also recites that the claimed plant must have 38J54 as an ancestor further indicating that these traits must originate from the 38J54 plant not 38N40. In response to the Examiner's contention that one could not distinguish the claimed plant from the prior art which shows each of these traits, Applicant submits that one can easily tell by reference to the plants breeding history, which can be confirmed by its molecular profile whether the plant did indeed have plant 38J54 as an ancestor and expressed two or more "38J54" traits. Further, any phenotypic trait that is expressed is a result of a combination of all of the genetic material present in the plant, and 38J54 will have its own unique genetic background that will give rise to the claimed plant and this profile along with its combination with other plants will result in a unique combined genetic profile that is the product claimed.

Furthermore, there is no expectation of success that the crossing of the Hybrid 38N40 with some yet to be identified plant would yield a plant with two of the traits enumerated in the claimed invention and at least 50% of its alleles from 38J54 because that particular plant did not begin with the claimed seed 38J54 which is essential. Applicant asserts that it is not the phenotypic characteristics alone that are claimed and taught in the instant invention. It is a combination of physiological and morphological characteristics, as claimed, which make the present Hybrid non-obvious and not anticipated over Piper '856. Further, In re Thorpe, states that "a product by process claim may be properly rejected over prior art teaching the same product produced by a different process", as noted by the Examiner. 227 U.S.P.Q. 964, 966 (Fed. Cir. 1985). However, Applicant submits that this is not the same product physiologically or morphologically as the cited prior art as can be evidenced by one skilled in the art through analysis of the data tables in each. In addition, it is impermissible to use hindsight reconstruction and the benefit of Applicant's disclosure to pick among pieces which are present in the art, there must be some suggestion to make the combination and an expectation of success. In re Vaeck, 20 U.S.P.Q.2d 1434 (Fed. Cir. 1991). Further, any phenotypic trait that is expressed is the result of the genetic material present in the plant, and 38J54 will have its own unique genetic background that will give rise to the claimed plant and this profile along with its combination with other plants will result in a unique combined genetic profile that is the product claimed. Thus, the present application deserves to be considered new and non-obvious compositions in their own right as products of crossing when 38J54 is used as a starting material.

In light of the above, Applicant respectfully requests the Examiner reconsider and withdraw the rejection to claims 1-32 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Piper (U.S. Patent 6,180,856).

Issues Under 35 U.S.C. § 103

Claims 1-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Piper (U.S. Patent 6,180,856). The Examiner states the "claims are drawn to a hybrid maize plant exhibiting all of the characteristics of 38J54".

Applicant respectfully traverses this rejection. When looking at a maize plant it would be possible to find many traits that are similar between varieties such as the color of flowers or growth habit. However, to say there are similarities in phenotype between two varieties is not the

same as saying that the two varieties have the same morphological and physiological characteristics as a whole, or that one is an obvious variant of the other. Further, similarity in phenotype does not mean that the two varieties will perform similarly, particularly in a breeding program. As stated above, variety with respect to agricultural variety may be defined as a group of similar plants that by structural features and performance can be identified from other varieties within the same species.

Applicant submits that Hybrid 38N40 does not exhibit the same characteristics as 38J54. Applicant will illustrate how 38J54 and 38N40 are different. Piper '856 does not teach or suggest hybrid maize plant 38J54 developed by a maize breeding program or the use of hybrid maize plant 38J54 in the production of tissue culture. It must be recognized that the hybrids provided by this invention are themselves unusual and unobvious results of a common process, in that they provide the unique combination of above average root strength, above average resistance to brittle snap, and are particularly suited to the Northcentral region of the United States (see pages 16-28, specification). Nonetheless, Hybrid 38J54 deserves to be considered as a new and non-obvious composition in its own right as does its tissue culture as products of the process when 38J54 is used as starting material. Applicant points out that 38J54 is a unique plant hybrid which never before existed until Applicant filed the application and until its deposit of the same. While Piper '856 does teach the general regeneration of maize plants from tissue culture techniques, it does not teach or suggest the use of the unique maize hybrid 38J54. As will be demonstrated below, several morphological and physiological characteristics of Hybrid 38J54 are either different from or not present in 38N40.

For example, Hybrid 38J54 has superior resistance to European Corn Borer (second generation) while 38N40 is susceptible to the disease. The varieties are also different with respect to Relative Maturity, anther color, silk color, plant height, and disease resistance. Differences between the two varieties are summarized in the table below:

<u>CHARACTERISTICS</u>	<u>38J54</u>	<u>38N40</u>
Comparative Relative Maturity Rating System	91	96
Anther color	Red	Light Green
Silk color	Light Green	Pink
Plant Height (cm)	227.0	271.0
Disease Resistance	Superior Resistance to European Corn Borer (2 nd Gen)	Susceptible to European Corn Borer (2 nd Gen)

This comparison clearly shows that 38N40 does not exhibit the characteristics of hybrid 38J54. Further, the present application clearly shows in Table 1 at pgs. 16-18 and Tables 2-4 at pgs. 19-28 that hybrid 38J54 exhibits more resistance to Anthracnose Stalk Rot, more resistance to Fusarium Ear and Kernel Rot, and a lower growing degree units to pollen shed and silk emergence and the aforementioned characteristics.

In light of the above, Applicant respectfully requests the Examiner reconsider and withdraw the rejection to claims 1-32 under 35 U.S.C. § 103(a).

Conclusion

In conclusion, Applicant submits in light of the above amendments and remarks, the claims as amended are in a condition for allowance, and reconsideration is respectfully requested.

No additional fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Reconsideration and allowance is respectfully requested.

Respectfully submitted,

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- pw/LA -

Application No. 09/491,910

**AMENDMENT — VERSION WITH MARKINGS
TO SHOW CHANGES MADE**

In the Specification

Please replace the paragraph at page 7, following "SUMMARY OF THE INVENTION", beginning at line 23 with the following:

According to the invention, there is provided a hybrid maize plant, designated as 38J54, produced by crossing two Pioneer Hi-Bred International, Inc. proprietary inbred maize lines GE500988 and GE533415. These lines, deposited with the American Type Culture Collection, (ATCC), Manassas, Virginia 20110, have accession number [] PTA-4279 for GE500988 and accession number [] PTA-4288 for GE533415, both deposited on May 6, 2002. This invention thus relates to the hybrid seed 38J54, the hybrid plant produced from the seed, and variants, mutants and trivial modifications of hybrid 38J54. This invention also relates to methods for producing a maize plant containing in its genetic material one or more transgenes and to the transgenic maize plants produced by that method. This invention further relates to methods for producing maize lines derived from hybrid maize line 38J54 and to the maize lines derived by the use of those methods. This hybrid maize plant is characterized by very high silage yield for its maturity in combination with excellent feeding value and starch concentration.

Please replace the paragraph beginning at page 29, line 32 with the following:

With the advent of molecular biological techniques that have allowed the isolation and characterization of genes that encode specific protein products, scientists in the field of plant biology developed a strong interest in engineering the genome of plants to contain and express foreign genes, or additional, or [modified] modified versions of native or endogenous genes (perhaps driven by different promoters) in order to alter the traits of a plant in a specific manner. Such foreign, additional and/or modified genes are referred to herein collectively as "transgenes". Over the last fifteen to twenty years several methods for producing transgenic plants have been developed, and the present invention, in particular embodiments, also relates to transgenic versions of the claimed hybrid maize line 38J54.

Please replace the paragraph beginning at page 42, line 2 with the following:

[A deposit of the seed of hybrid 38J54 is and has been] Applicant has made a deposit of at least 2500 seeds of Hybrid Maize Line 38J54 with the American Type Culture Collection (ATCC), Manassas, Va. 20110 USA, ATCC Deposit No. PTA-4339. The seeds deposited with the ATCC on May 13, 2002 were taken from the deposit maintained by Pioneer Hi-Bred International, Inc., 800 Capital Square, 400 Locust Street, Des Moines, Iowa 50309-2340, since prior to the filing date of this application. Access to this deposit will be available during the pendency of the application to the Commissioner of Patents and Trademarks and person determined by the Commissioner to be entitled thereto upon request. Upon allowance of any claims in the application, the Applicant(s) will make the deposit available to the public pursuant to § 1.808 [without restriction a deposit of at least 2500 seeds of hybrid 38J54 with the American Type Culture Collection (ATCC), Manassas, Virginia 20110. The seeds deposited with the ATCC will be taken from the same deposit maintained at Pioneer Hi-Bred and described above]. Additionally, Applicant(s) will meet all the requirements of 37 C.F.R. §§ 1.801 - 1.809, including providing an indication of the viability of the sample when the deposit is made. This deposit of Hybrid Maize Line 38J54 will be maintained without restriction in the ATCC Depository, which is a public depository, for a period of 30 years, or 5 years after the most recent request, or for the enforceable life of the patent, whichever is longer, and will be replaced if it ever becomes nonviable during that period. Applicant has no authority to waive any restrictions imposed by law on the transfer of biological material or its transportation in commerce. Applicant does not waive any infringement of its rights granted under this patent or under the Plant Variety Protection Act (7 USC 2321 et seq.) which may protect Hybrid Maize Line 38J54.

In the Claims

Please amend claims 1, 5-8, 11-12, 15-16, 19, 21, 24-25, 28-29 and 32 as follows:

1. (Amended)

Hybrid maize seed designated 38J54, representative seed of said hybrid 38J54 having been deposited under ATCC accession number [] PTA-4339.

5. (Amended)

A tissue culture of regenerable cells of a hybrid maize plant 38J54, representative seed of said hybrid maize plant 38J54 having been deposited under ATCC accession number [] PTA-4339], wherein the tissue regenerates plants capable of expressing all the morphological and physiological characteristics of said hybrid maize plant 38J54].

6. (Amended)

[A] The tissue culture according to claim 5, the cells or protoplasts being from a tissue selected from the group consisting of leaves, pollen, embryos, roots, root tips, anthers, silks, flowers, kernels, ears, cobs, husks, and stalks.

7. (Amended)

A maize plant, or its parts, regenerated from the tissue culture of claim 5 and [capable of] expressing all the morphological and physiological characteristics of hybrid maize plant 38J54, representative seed having been deposited under ATCC accession number [] PTA-4339.

8. (Amended)

The maize plant of claim 2 wherein said plant has been manipulated to be [is] male sterile.

11. (Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 2, wherein said maize plant has derived at least 50% of its alleles from 38J54 and is capable of expressing a combination of at least two 38J54 traits selected from the group consisting of: a relative maturity of approximately 91 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, excellent yield potential, above average root strength, above average brittle snap resistance, and shorter than other hybrids of similar maturity[, and particularly suited to the Northcentral region of the United States].

12. (Amended)

[A] The hybrid maize plant according to claim 2, wherein the genetic material of said plant contains one or more transgenes.

15. (Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 12, wherein said maize plant has derived at least 50% of its alleles from 38J54 and is capable of expressing a combination of at least two 38J54 traits selected from the group consisting of: a relative maturity of approximately 91 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, excellent yield potential, above average root strength, above average brittle snap resistance, and shorter than other hybrids of similar maturity[, and particularly suited to the Northcentral region of the United States].

16. (Amended)

[A] The hybrid maize plant according to claim 2, wherein the genetic material of said plant contains one or more genes transferred by backcrossing.

19. (Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 16, wherein said maize plant has derived at least 50% of its alleles from 38J54 and is capable of expressing a combination of at least two 38J54 traits selected from the group consisting of: a relative maturity of approximately 91 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, excellent yield potential, above average root strength, above average brittle snap resistance, and shorter than other hybrids of similar maturity[, and particularly suited to the Northcentral region of the United States].

21. (Amended)

The maize plant of claim 20 wherein said maize plant has been manipulated to be [is] male sterile.

24. (Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 20, wherein said maize plant has derived at least 50% of its alleles from 38J54 and is capable of expressing a combination of at least two 38J54 traits selected from the group consisting of: a relative maturity of approximately 91 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, excellent yield potential, above average root strength, above average brittle snap resistance, and shorter than other hybrids of similar maturity[, and particularly suited to the Northcentral region of the United States].

25. (Amended)

[A] The hybrid maize plant according to claim 20, wherein the genetic material of said plant contains one or more transgenes.

28. (Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 25, wherein said maize plant has derived at least 50% of its alleles from 38J54 and is capable of expressing a combination of at least two 38J54 traits selected from the group consisting of: a relative maturity of approximately 91 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, excellent yield potential, above average root strength, above average brittle snap resistance, and shorter than other hybrids of similar maturity[, and particularly suited to the Northcentral region of the United States].

29. (Amended)

[A] The hybrid maize plant according to claim 20, wherein the genetic material of said plant contains one or more genes transferred by backcrossing.

32. (Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 29, wherein said maize plant has derived at least 50% of its alleles from 38J54 and is capable of expressing a combination of at least two 38J54 traits selected from the group consisting of: a relative maturity of approximately 91 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, excellent yield potential, above average root strength, above average brittle snap resistance, and shorter than other hybrids of similar maturity[, and particularly suited to the Northcentral region of the United States].

Please add new claims 33 – 40 as follows:

33. (New)

A method of making a hybrid maize plant designated 38J54 comprising:
crossing an inbred maize plant GE500988, deposited as PTA-4279 with a second inbred maize
plant GE533415, deposited as PTA-4288; and
developing from the cross a hybrid maize plant representative seed of which having been
deposited under ATCC Accession Number PTA-4339.

34. (New)

A method of making an inbred maize plant comprising:
obtaining the plant of claim 2 and
applying double haploid methods to obtain a plant that is homozygous at essentially every locus,
said plant having received all of its alleles from maize hybrid plant 38J54.

35. (New)

A method for producing an 38J54 progeny maize plant comprising:

- (a) growing the plant of claim 2, and obtaining self or sib pollinated seed therefrom;
and
- (b) producing successive filial generations to obtain a 38J54 progeny maize plant.

36. (New)

A maize plant produced by the method of claim 35, said maize plant having received all
of its alleles from hybrid maize plant 38J54.

37. (New)

A method for producing a population of 38J54 progeny maize plants comprising:

- (a) obtaining a first generation progeny maize seed produced by crossing the maize
plant of claim 2 with a second maize plant;
- (b) growing said first generation progeny maize seed to produce F₁ generation maize
plants and obtaining self-pollinated seed from said F₁ generation maize plants; and

(c) repeating the steps of growing and harvesting successive filial generations to obtain a population of 38J54 progeny maize plants.

38. (New)

The population of 38J54 progeny maize plants produced by the method of claim 37, said population, on average, deriving at least 50% of its alleles from 38J54.

39. (New)

A 38J54 maize plant selected from the population of 38J54 progeny maize plants produced by the method of claim 37, said maize plant deriving at least 50% of its alleles from 38J54.

40. (New)

The method of claim 37, further comprising applying double haploid methods to said F_1 generation maize plant or to a successive filial generation thereof.